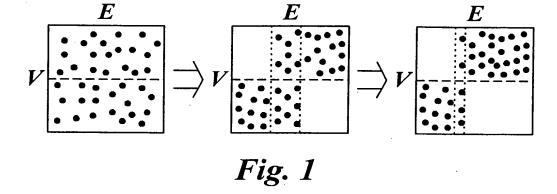
Blakely, Sokoloff, Taylor & Zafman LLP (310) 207-3800 Title: METHOD FOR MIN-CUT AND RATIO MIN-CUT PARTITIONING 1st Named Inventor: Kuo-Hsing Cheng Express Mail No.: EV339918273 US Docket No.: 4728P042D Sheet: 1 of 18



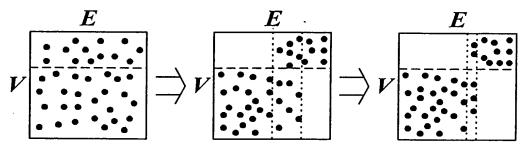


Fig. 2

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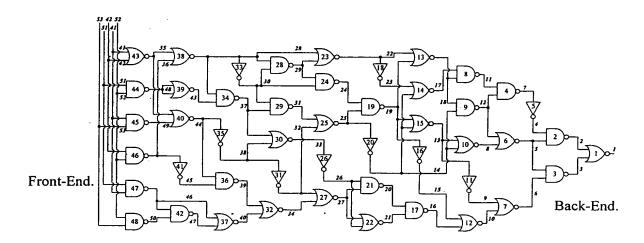


Fig. 3

Blakely, Sokoloff, Taylor & Zafman LLP (310) 207-3800 Title: METHOD FOR MIN-CUT AND RATIO MIN-CUT PARTITIONING 1st Named Inventor: Kuo-Hsing Cheng Express Mail No.: EV339918273 US Docket No.: 4728P042D Sheet: 3 of 18

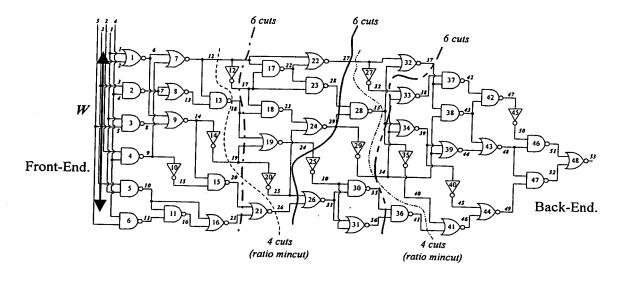


Fig. 4

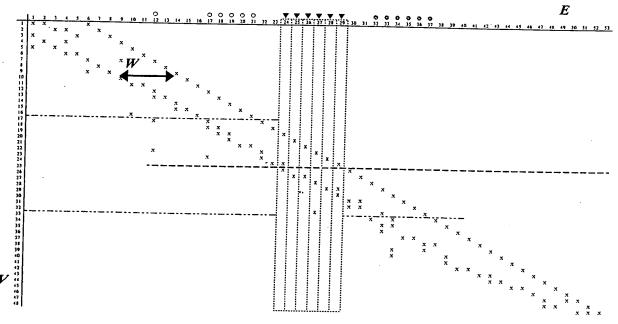


Fig. 5

Blakely, Sokoloff, Taylor & Zafman LLP (310) 207-3800 Title: METHOD FOR MIN-CUT AND RATIO MIN-CUT PARTITIONING 1st Named Inventor: Kuo-Hsing Cheng Express Mail No.: EV339918273 US Docket No.: 4728P042D Sheet: 4 of 18



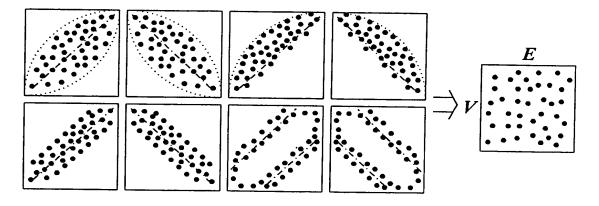


Fig. 6

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```
#include <stdlib.h>
#include <stdio.h>
#include <time.h>
#define Required_Num 48
int A[Required_Num], B[Required_Num], C[Required_Num];
int main(void)
    int i, j, m, n, seed, non_used;
    time_t t;
    for(i=0; i < Required_Num; i++)</pre>
                                                      /* For initialize */
    \{ A[i] = 0; B[i] = i+1; \}
                                                        /* srand((unsigned) time(&t));*/
    seed = (unsigned) time(&t);
    srand( seed );
    printf("\nSeed %u, random numbers from 1 to %d\n", seed, Required_Num);
    for(i= Required_Num-1; i>=0; i--)
         int k;
         k = (rand() % Required_Num);
         printf("%2d\t", k+1);
         if (B[k] != 0) \{ A[i] = k+1; B[k] = 0; \}
    printf("\nArray A... Non-repeated generated numbers (from back-end):\n");
    for(i=0; i< Required_Num; i++) printf("%2d\t", A[i]);</pre>
    printf("\nArray B... Not yet used numbers\n");
                                                                                     SOME
                                                                                               OUTPUT RESULTS:
    for(i=0; i < Required_Num; i++)
          if(B[i]!=0)
          { C[j]=B[i];
                                                                                                      13
           printf("%2d\t", B[i]);
           j++;
    non_used=j;
                                                                                                                    :rs
3 34 35
    printf("\nInsert Sequence of "
    "Non-yet-used Numbers...\n");
                                                                                                           21
                                                                                                                 33
    for(i=0; i<Required Num; i++)</pre>
                                                                                     After Modified ...
                                                                                     Arter Bodiries...
10 28 17 48 30 14 46
24 26 25 1 39 18 37
3 41 35 13 21 19 34
8 12 33 32 7 27 36
4 47 44 31 5 42 45
        if(A[i]==0)
           if((j%2) == 0)
                                                                                             50, random numbers from 1 to 48
35 29 43 22 48 37 39 41
37 4 4 46 31 38 15 27
41 17 38 32 14 22 7 8
18 27 5 11 26 1 47 44
44 19 37 34 48 34
... Non-repeated generated numbers (from back-end):
34 0 19 0 28 30 0 47
11 5 0 18 23 0 8 7
32 0 17 0 40 0 27 15
46 0 4 0 0 6 41 39
22 43 29 35 13 44
... Not vet used numbers
               A[i] = C[non\_used-1-m]; m++;
           else
                                                                                     30 28 44 19 37 34 48 34 Array A... Non-repeated generated number: 0 0 34 0 19 0 28 30 0 1 26 11 5 0 18 23 0 8 0 14 32 0 17 0 40 0 27 38 31 46 0 4 0 0 6 41 37 48 22 43 29 35 13 44 Array B... Not yet used numbers 2 3 9 10 12 16 20 21 24 33 36 42 45 Insert Sequence of Non-vet-used Numbers
            {
               A[i] = C[n];
           printf("%2d\t", A[i]);
                                                                                   Inser.
45 2 42
24 16 21 20
After Modified...
45 2 34 42 19
1 26 11 5 9
10 14 32 25 17
38 31 46 16 4
37 48 22 43 29
    printf("\nAfter Modified...\n");
     for(i=0; i< Required_Num; i++)
          printf("%2d\t", A[i]);
     return 0;
}
```

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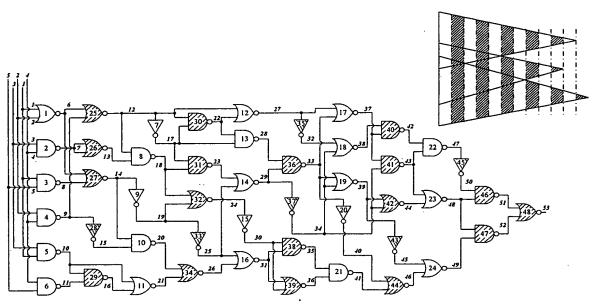


Fig.	<i>8A</i>
------	-----------

Seed	34731,	random	numbers	s from	1 to 24				
1	10	21	8	17	6	4	7	22	1 :
9	9	12	13	12	19	6	4	10	2
23	11	4	24						
Arra	y A	Non-rep	eated ge	enerate	d number	s (from	back-	end)	
24	0	11	23	0	0	0	0	19	
13	12	0	9	15	22	7	4	6	17
В	21	10	1						
Arra	y B	Not yet	used no	umbers					
2	3	5	14	16	18	20			
Inse	rt Sequ	ence of	Non-yes	t-used I	Numbers.	• •			
2	20	3	18	5	16	14			-
Afte	r Modif	ied							
24	2	11	23	20	3	18	5	19	1
13	12	14	9	15	22	7	4	6	- 1
8	21	10	•						

Seed	34797.	random	numbers	from	25 to 48	 3			
33	41	28	40	33	45	36	48	44	39
27	47	35	37	30	31	44	33	46	25
35	28	30	46						
Array	/ A I	Non-repe	eated ge	nerate	d number	s (fro	back-	end)	
0	0	0	0	25	46	0	0	31	30
37	35	47	27	39	44	48	36	45	0
40	28	41	33						
Array	, в в	ot yet	used nu	mbers					
26	29	32	34	38	42	43			
Inser	t Seque	ence of	Non-yet	-used i	lumbers.				
26	43	29	42	32	38	34			
After	Modifi	ied							
26	43	29	42	25	46	32	38	31	30
37	35	47	27	39	44	48	36	45	34
40	28	41	33						

Fig. 8B

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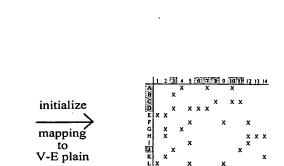
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0. Initialize: mapping (V, E) pairs to V-E plain, confirm the (V, E) pair distributed condition under nearly Max-cut reservation and may randomize the node number order. 1. Phase One: basic four steps. (B): Bottom-side base E N E N (B) (R) (T) (L) (R): Right-side base E: Edge Radix Sort (T): Top-side base N: Node Radix Sort (L): Left-side base 2. Phase Two Begins: different additional steps can be choiced. (R)(T)(L) (R)(T)N E N (R) (T) (L) (R) (T) (R) (B) (R) (B) E (T) N (L) E Ε (L) (R)(T)(B) (R) (B) (L) (B) (R) (\overline{T}) (B)(R)(T)(L) (R) (T) (L) (B) (T) (L) (B) (R) (L) (B) (R) (T) (B) (R) (B)(R)(B)(R)(T)2E. Some other recurring orders. 2F. Some other clustering techniques. *When every sort step completed, record nodes set, and if node set no more change, halt the procedures.

Fig. 9

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A 14 edges / 15 nodes example.

Confirm the distributed condition.

Fig. 10A

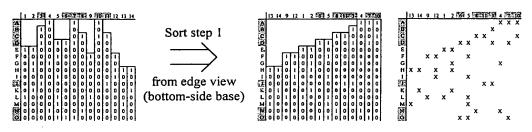


Fig. 10B

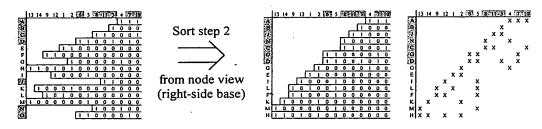


Fig. 10C

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Sort step 3 from edge view (top-side base)

Fig. 10D

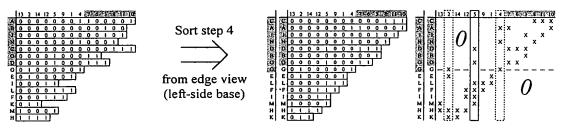


Fig. 10E

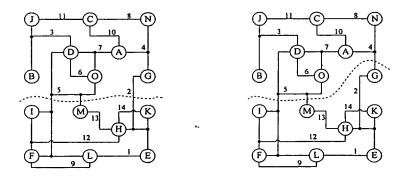


Fig. 10F

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Fig. 11

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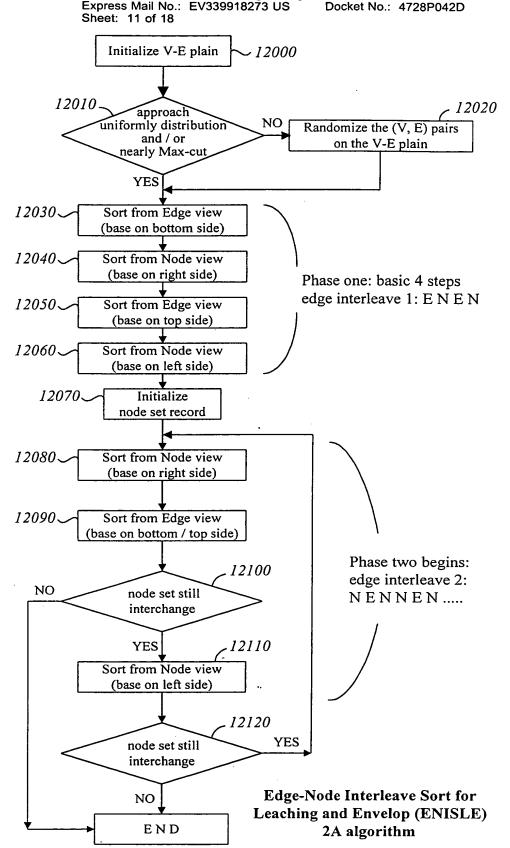


Fig. 12

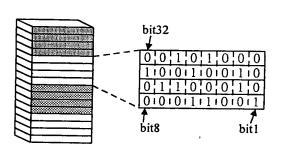
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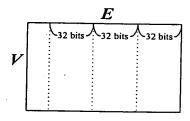
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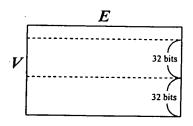
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```
struct bitfield32 {
    bit32 :1;
    bit31 :1;
    bit30 :1;
    .....
    bit2 :1;
    bit1 :1;
} radix_sort_unit;
```

Fig. 13





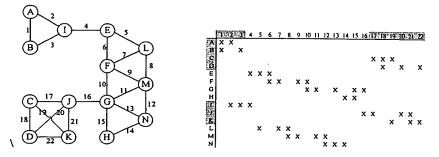
Radix Sorting (LSD) Example: 232, 321, 213, 231, 111, 112, 132, 123, 221 $1S \rightarrow 321, 231, 111, 221$ $2S \rightarrow 232, 112, 132$ $3S \rightarrow 213, 123$ 321, 231, 111, 221, 232, 112, 132, 213, 123 $10S \rightarrow 111, 112, 213$ $20S \rightarrow 321, 221, 123$ $30S \rightarrow 231, 232, 132$ 111, 112, 213, 321, 221, 123, 231, 232, 132 $100S \rightarrow 111, 112, 123, 132$ $200S \rightarrow 213, 221, 231, 232$ $300S \rightarrow 321$ Output: 111, 112, 123, 132, 213, 221, 231, 232, 321

Fig. 14

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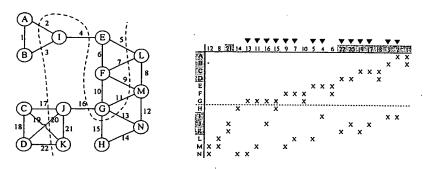
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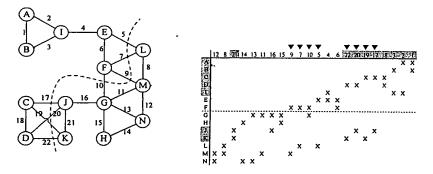
Initialize the V-E Plain.

Fig. 15A



Step 1, cut numbers: 14.

Fig. 15B



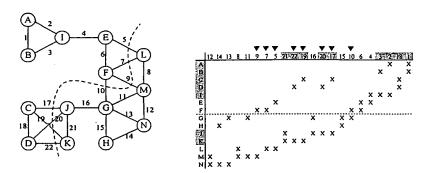
Step 2, cut numbers: 8.

Fig. 15C

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Express Mai (40)

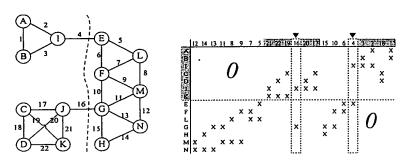
Chart Mai (40)

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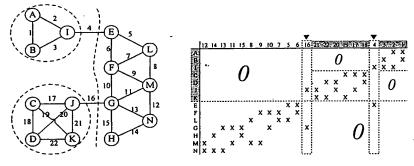
Step 3, 4, cut numbers: 8.

Fig. 15D



Step 5, cut numbers: 2.

Fig. 15E



Step 6, cut numbers: 2.

Fig. 15F

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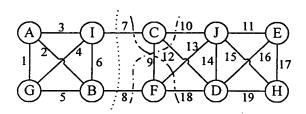
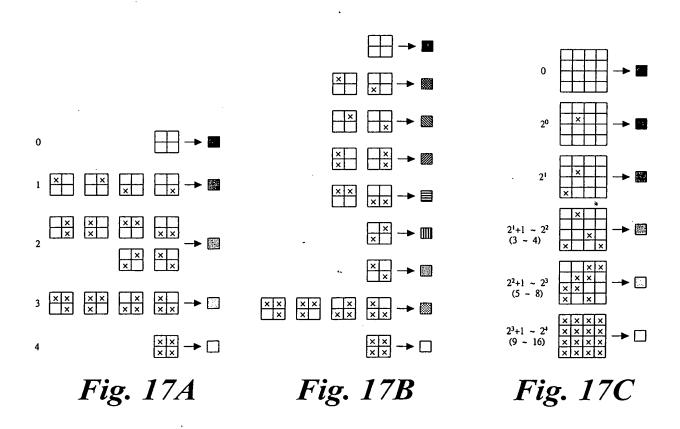


Fig. 16



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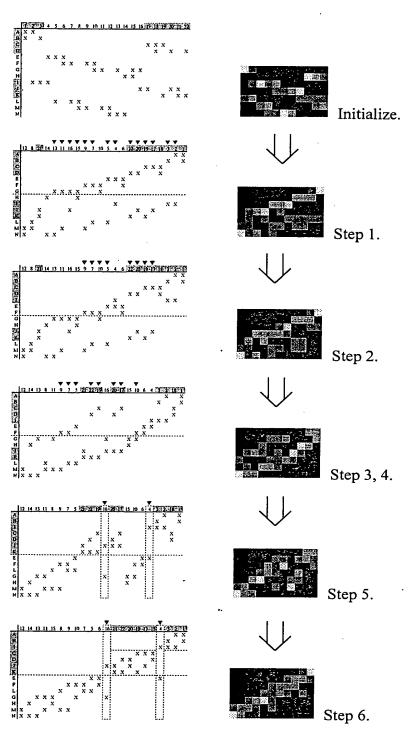
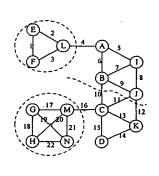


Fig. 18.

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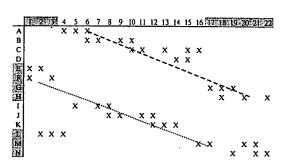


Fig. 19

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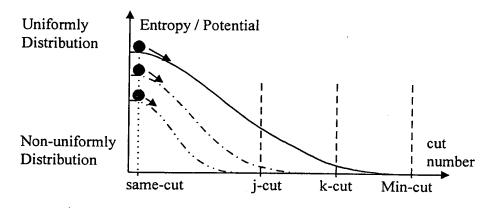


Fig. 20A

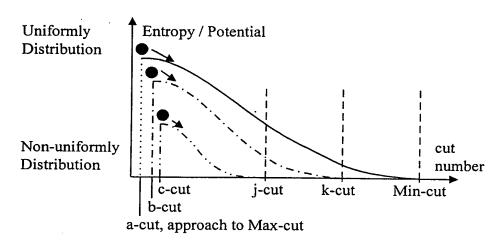


Fig. 20B

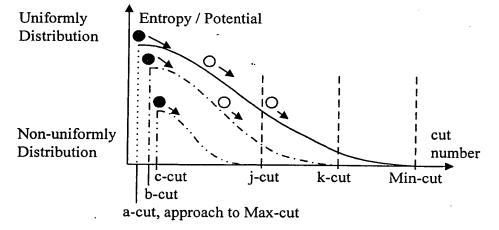


Fig. 20C